

Name \_\_\_\_\_

AP Chemistry

## Electron Configuration

Define the following terms in section 7.6:

- Principal quantum number ( $n$ )
- Angular momentum quantum number ( $l$ )
- Magnetic quantum number ( $m_l$ )
- Electron spin quantum number ( $m_s$ )

Define the following principles/rules associated with electron configuration in sections 7.8 and 7.11 along with the Electron Configuration POGIL:

- Pauli exclusion principle
- Aufbau principle
- Hund's rule

Example:

Write the electron configuration for bismuth, element number 83. What is the noble gas configuration for this element? How many unpaired electrons does this atom have?

Electron configuration:  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 5d^{10} 4f^{14} 6p^3$

Noble gas configuration:  $[\text{Xe}] 6s^2 5d^{10} 4f^{14} 6p^3$

3 unpaired electrons

## Questions

1) Write the electron configuration for the following elements:

- (a) Cs
- (b) Ni
- (c) Se
- (d) Cd
- (e) Ac
- (f) Pb

2) Write the noble gas configuration for the following elements:

- (a) Ga
- (b) Ca
- (c) V
- (d) I
- (e) Y
- (f) Pt
- (g) Lu

3) Identify the specific element that corresponds to each of the following electron configurations:

- (a)  $1s^2 2s^2 2p^6 3s^2$
- (b)  $[\text{Ne}] 3s^2 3p^1$
- (c)  $[\text{Ar}] 4s^1 3d^5$
- (d)  $[\text{Kr}] 5s^2 4d^{10} 5p^4$

4) What is wrong with the following electron configuration for atoms in their ground states?

- (a)  $1s^2 2s^2 3s^1$
- (b)  $[\text{Ne}] 2s^2 2p^3$
- (c)  $[\text{Ne}] 3s^2 3d^5$